

CLAIMS

We claim:

1. A transdermal substance delivery device, comprising:

 at least one ultrasonic transducer for generating at least one ultrasonic transmission for inducing movement of at least one substance into a tissue;

 said at least one ultrasonic transmission and at least one sensor positioned with said at least one transducer to sense reflected ultrasonic transmissions; and

 wherein, said sensed ultrasonic transmissions are indicative of substance actually moved into said tissue.
2. The transdermal substance delivery device of claim 1, wherein said ultrasound has a frequency in the range of about 20 KHz to 30 MHz.
3. The transdermal substance delivery device of claim 1, wherein said ultrasonic transmission has an intensity of about 125-mW/sq. cm to 3.0 W/sq. cm.
4. The transdermal substance delivery device of claim 1, wherein said ultrasound utilizes an alternating waveform.
5. The transdermal substance delivery device of claim 4, wherein said alternating waveform comprises a sawtooth waveform.

6. The transdermal substance delivery device of claim 4, wherein said alternating waveform comprises a square waveform.
7. The transdermal substance delivery device of claim 1, wherein said ultrasound is applied substantially continuously.
8. The transdermal substance delivery device of claim 1, wherein said ultrasound is pulsed.
9. The transdermal substance delivery device of claim 1, further comprising a control device.
10. A method for transdermal substance delivery, comprising:
 - generating at least one ultrasonic transmission from at least one ultrasonic transducer for inducing movement of at least one substance into a tissue;
 - positioning said at least one ultrasonic transmission and at least one sensor positioned with said at least one transducer to sense reflected ultrasonic transmissions; and
 - wherein, said sensed ultrasonic transmissions are indicative of substance actually moved into said tissue.
11. The method of claim 10, wherein said ultrasonic transmission has a frequency in the range of about 20 KHz to 30 MHz.

12. The method of claim 10, wherein said ultrasonic transmission has an intensity of about 125-mW/sq. cm to 3.0 W/sq. cm.
13. The method of claim 10, wherein said ultrasonic transmission utilizes an alternating waveform.
14. The method of claim 13, wherein said alternating waveform comprises a sawtooth waveform.
15. The method of claim 13, wherein said alternating waveform comprises a square waveform.
16. The method of claim 10, wherein said ultrasonic transmission is applied substantially continuously.
17. The method of claim 10, wherein said ultrasonic transmission is pulsed.
18. The method of claim 10, further comprising a control device.